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Artificial Intelligence and Law: Intellectual Property Law and Some Normative Aspects in French and European Law

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I The nuanced adaptability of intellectual property law to artificial intelligence

In its resolution of 16 February 2017 on civil law rules on robotics[1], the European Parliament advocated a technology-neutral approach to intellectual property: the common intellectual property regime is likely to apply to innovative technologies in robotics and artificial intelligence: the adoption of specific provisions does not seem necessary, but it appears that if artificial intelligence is eligible for the various intellectual property rights, the use of patents can be tricky in order to protect the technology itself (A) and that copyright is excluded in matters of creation entirely resulting from the activity of an artificial intelligence (B).

A- The use of patents: a well-protected technology?

If the patent is immediately recognized as an intellectual property right, it is because the robot is likely to meet the conditions for patentability thanks to its innovative nature. In January 2019, WIPO published a study on artificial intelligence and new figures showing the recent massive increase in patented inventions based on artificial intelligence[2]. More than 340,000 patent applications related to artificial intelligence have been registered since its appearance in the 1950s. Most of it has been published since 2013, and from 2012 to 2017, the

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1) According to the European Parliament,"(...) that there is no legal provision specifically applicable to robotics, but that existing legal regimes and doctrines can apply as they stand to this field, although some aspects nevertheless require specific consideration; calls on the Commission to support a transversal and technologically neutral approach to intellectual property, which applies to the different sectors involved in the application of robotics" : http://www.europarl.europa.eu/doceo/document/TA-8-2017-0051_FR.html

2) https://www.wipo.int/wipo_magazine/fr/2019/01/article_0001.html

number of patents in artificial intelligence increased by an average of 28% per year. The study also reveals that 26 of the top 30 patent applicants in the field of artificial intelligence are companies, the other four being universities or public research organizations. The holders of patents on artificial intelligence are mainly manufacturers, such as IBM, Microsoft, Toshiba, Samsung or NEC, and some public research organizations.

As in any innovative and technological field, it is important to remember the essential role of patents, which provide legal protection for incumbent companies. The patent allows its holder to benefit from a twenty-year operating monopoly: through this competitive advantage, companies can amortize their heavy investments and obtain exclusive profits. This exclusivity is all the more important as investments in pre-commercialization research and development are often considerable. In addition, the patent confers a monopoly of exploitation which also allows its holder to prohibit third parties from using the patented technology. This legal protection through counterfeiting action will be useful to protect these inventions, some of which may lend themselves to reverse engineering.

In the absence of specificity of the patent relating to techniques related to artificial intelligence, the classical requirements of the Intellectual Property Code apply for the French patent, or those equivalent to the European Patent Convention. First of all, it must be an invention, i.e. a technical solution to a technical question[3]. In the absence of a technical nature, this object cannot be protected. The notion of invention is not defined by the texts, and it is possible to refer to a list of objects excluded from patentability[4], including mathematical methods, principles and methods in the exercise of intellectual activities, or computer programs. It should be remembered that the exclusion applies to these objects taken "as such"[5]. The artificial intelligence technique must then satisfy the substantive conditions imposed by industrial property law for obtaining the patent: it must be industrially applicable, new and inventive[6]. By this requirement of inventiveness, it is in fact a question of requiring the invention not to be obvious to the skilled person.

The inventive step that must characterize the invention is not related to human intervention. In particular, there is no requirement for the inventor to be a natural

3) Art. 52 (1) of the European Patent Convention (EPC).
4) Art. 52 (2) of the EPC.
5) Art. 52 (3) of the EPC.
6) Art. L. 611-1 et s. of the Intellectual Property Code (IPC).

person within the conditions of patentability. Like all industrial property titles based on a filing, the quality of the inventor is not a condition for obtaining the title, which makes it possible to avoid any consideration concerning the genesis of creation: an artificial intelligence could be at the origin of the invention because no manifestation of the inventor's personality is required during the creative process; it is sufficient that the patent applicant has intellectual control over the invention[7].

Although patent law has not been amended for artificial intelligence, it should be noted that the European Patent Office (EPO) has adapted its examination procedures. Indeed, the EPO has taken the opportunity of the recent update of the examination guidelines[8] to complete the section on mathematical methods and to create a new section on artificial intelligence and automatic learning[9]. It is interesting to see that if the legal texts have not been reformed, the Office adapts to technological developments.

However, for various reasons, the use of patents is not systematic in the field of artificial intelligence: patents are expensive, particularly when one wishes to extend their protection to foreign countries, and they can sometimes be difficult to obtain on technologies containing software. Indeed, software is essential in the functioning of any artificial intelligence process. However, the way software is protected in Europe is based on copyright and not on a patent, which makes access to the patent sometimes difficult. Companies may then prefer to use trade secrets when seeking to protect their innovations.

Innovative companies therefore seek to protect their inventions through intellectual property or business secrecy. More to a lesser extent, they sometimes resort to practices based on open source, as opposed to a private approach of appropriation through patents. Platforms dedicated to robotics research have developed open source practices that allow free access to software to improve its content: no proprietary rights, including intellectual property rights, can be invoked to block access or exclusively reserve the exploitation of creations[10]. With this logic of openness, there are many advantages for the users of these platforms, excluding any appropriation of these innovations.

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7) M. Vivant, Patent law, Dalloz, 2ème éd. 2004, spéc. ch. 3.

8) Updated effective November 1st, 2018.

9) J.-M. Deltorn, The patentability of applications of artificial intelligence and automatic learning: the practice of the European Patent Office, Propriété industrielle n° 3, Mars 2019, dossier 4.

10) Among these collaborative platforms is Robot Operation System (ROS) : http://www.ros.org/

Due to its functionalities, the intelligent robot is a commercial good that can be marketed. For this, the appearance of the robot and its various identifiers will be important. The robot's corpus can be protected by industrial design law[11]: the latter plays an important role in exclusively protecting this "physiognomy" of the machine, thus providing a competitive advantage and a return on the investment made. In addition, the robot is designated by a carefully chosen name, such as Nao, Paro, or Chihira Aico, and this name is registered as a trademark[12].

Artificial intelligence is integrated into intellectual property which allows its holder to have a monopoly of exploitation and to avoid counterfeiting both the technology and the appearance of the robot. While patents are the main tool for protecting technological creations related to artificial intelligence, copyright is sought to protect the result of the work of artificial intelligence.

B- The rejection of copyright with regard to creation generated by artificial intelligence

Artificial intelligence is a good that is likely to produce other goods about which the question of recognition of copyright is raised. Can the result obtained from the activity of an intelligent system be considered as a work of the mind within the meaning of literary and artistic property law, and can the robot be recognised as the author of a work of the mind?

Copyright protects an original work linked to a natural person because of the imprint of the author's personality on that work and the interference of an intelligent system poses an insoluble equation to be solved. Today, the notion of originality leads directly to the individual. The latter refers to a creation that implies human consciousness, and to the notion of originality that itself places the author as a natural person at the centre of the creative process.

Faced with the inadequacy of this creative process in relation to the classical notion, how can law accommodate the final realization of an artificial intelligence? The solutions identified so far about creation made with a computer or machine are not suitable.

The hypothesis of robot-assisted creation must be ruled out. In this case, the natural person uses the robot to create a creation. If the person can go beyond mastering these tools and the robot, beyond a simple know-how, bring the imprint of his personality and thus create an original work, he will be the author in the

11) Art. L. 511-1 et s. of the IPC.
12) Art. L. 711-1 et s. of the IPC.

sense of intellectual property law. The robot is then conceived as an instrument at the creator's disposal, which does not pose any difficulties in terms of qualifying and assigning copyrights; moreover, computer-aided creation has been known for a very long time.

On the other hand, in the presence of artificial intelligence, it is no longer possible to base creation on the human choices of the computer scientist who programmed the machine. For a long time, the actions of the machine were dependent on the choices made by the programmers, which made it possible to link the result obtained by the machine to the human decision. With artificial intelligence, this link between creation and the computer scientist no longer exists: the machine's programming no longer makes it possible to determine creation and it has no direct influence on the creation process and the result obtained by the action of the intelligent machine[13].

This hypothesis in which artificial intelligence will create alone is problematic: it is the possibility of creations realized by artificial intelligence independently of man. Thanks to artificial intelligence, the system or robot can make decisions because of its autonomy and ability to learn. This hypothesis is not science fiction and autonomous creations are multiplying from robotic painter, scriptwriter, or even music composer. The question then arises as to whether the robot can be the author of a work of the mind, since no other author can be envisaged[14].

To date, the law does not allow a positive answer to this question. Indeed, the creative process remains based on the personality of the author considered fundamental to the recognition of copyright. The criterion for the application of copyright lies in an original creation marked by the personality of its author. However, without human intervention, this personality is missing and cannot allow us to recognize the authorship of a robot, however intelligent it may be. This exclusion is rather classic, because a legal entity has always been denied the right to be an author, but it can also be a copyright owner. In other words, only a natural person can be recognized as the author of an original work: it is therefore the limit that prohibits a robot from being an author, even though it is capable of making

13) A. Cruquenaire, A. Delforge, J.-B. Hubin, M. Knockaert, B. Michaux et Th. Tombal, Droit d'auteur et œuvres générées par machine, in L'intelligence artificielle et le droit, Larcier 2017, p. 189.

14) J. Larrieu, The robot and copyright, in Mélanges André Lucas, Lexisnexis 2014, p. 465; Intellectual property law and robots, Journal International de Bioéthique, 2013/4 (Vol. 33), p. 125; The robots and the intellectual property law, Prop. industr. février 2013, n° 2, étude 1.

creations. The debate is lively and opposes those who categorically reject any integration of artificial intelligence into copyright, which must remain based on the human person[15] and those who support a change in the law on this issue. Some consider that the law now appears to be inadequate for the issue of intelligent robots. Several reports have considered that the rules must evolve to take into consideration the creative autonomy of the robot, which allows it to create its own artistic creation: by going beyond the subjective conception of originality and its meaning linked to the imprint of the author's personality, it would be possible to admit an original creation by an artificial intelligence. Whatever the path taken, the question is whether to recognize in the future the existence of copyright-protected works created by robots.

Because they will multiply in the future, the autonomous creations of robots will generate a great deal of discussion about the ownership of intellectual property rights over these creations produced by artificial intelligence. However, the application of positive law shows its limits in understanding the activity of artificial intelligence: with the increasing use of intelligent systems by artists and creators, the boundary between creations made by a person and those produced by artificial intelligence is becoming difficult to maintain to the point of raising the question of adopting precise rules in this area.

At present, no changes have been made to intellectual property law, which therefore does not offer suitable instruments for the protection of artificial intelligence[16] and the enhancement of the result obtained by the technology. In the absence of special regulations, new approaches to the legal regulation of artificial intelligence have been proposed.

II New ways of regulating artificial intelligence

To regulate artificial intelligence while promoting its development, ethical rules have been published (A), but some consider it necessary to govern it specifically by creating a specific status (B).

A- The ethical rules of the European Commission

Among the possible ways of regulating artificial intelligence is first of all the

15) X. Labbée, The work of art, law and humanity, D. 2019, p. 897; rejecting any copyright with an automated creation process : Rapport français au Congrès de l'ALAI de 1989, éd. Ivon Blais, 1990.

16) If data mining has been specially admitted as an exception to copyright, it is to allow the development of artificial intelligence: art. L. 122-5 of the CPI.

ethical approach. This is particularly the case for robotics[17], for which proposals consist in establishing ethical charters for intelligent robots[18]. This type of charters aims above all to frame the applications that man can make of these intelligent robots. This would include advocating ethical practices and invoking a certain deontology with regard to the functionalities of intelligent robots: the main target is the use of robots that can harm humans, such as soldier robots or medical robots.

Concerning artificial intelligence more broadly, regulation by the ethical way is the path chosen for the moment by the European Union. An ethical charter was adopted on December 3rd 2018 by the European Commission for the efficiency of justice[19]. Furthermore a European group of high-level experts in artificial intelligence has been set up to reflect on the future of artificial intelligence in Europe and to advise the European Commission. Among its tasks, this group was to make recommendations on ethics and artificial intelligence. Thus, on April 8, 2019, the final version of the "Ethics Guidelines For Trustworthy Artificial Intelligence" was published, proposing ethical rules for the strategic sector of artificial intelligence[20]. The aim is to strengthen confidence in artificial intelligence centred on the human factor, without yet embarking on the path of regulation. The use of ethics is justified because humans must remain at the heart of technologies related to artificial intelligence. According to the Guidelines, trustworthy artificial intelligence should be : "lawful - respecting all applicable laws and regulations, ethical - respecting ethical principles and values and robust - both from a technical perspective while taking into account its social environment". In addition to establishing ethical rules, the plan also requires Member States to invest in research to promote the development of artificial intelligence, with the aim of catching up with the situation in other countries such as the United States and China. The European Commission wants to work on the development of artificial intelligence at international level "with like-minded partners such as Japan, Canada or Singapore".

Thus, ethical rules must constitute broad guidelines for the development of artificial intelligence. Among the principles affirmed, artificial intelligence must be

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17) N. Nevejans, Treaty on the law and ethics of civil robotics, LEH 2017.

18) D. Forest, When ethics comes to robots (?), Revue Dalloz IP/IT 01/09/2017, n° 9, p. 484.

19) This ethical charter sets out five principles to guide policy makers, legal professionals and designers in the development of the application of artificial intelligence in the judicial field: Y. Meneceur, The teachings of European ethics of artificial intelligence, JCP G, n° 12, 25 mars 2019, doctr. 325.

20) https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai

centred on the human being and placed at the service of humanity and the common good. To maximize the benefits of artificial intelligence and minimize risks, manufacturers of robots and intelligent systems must deploy trustworthy artificial intelligence, which will in the future win public trust and make companies more competitive.

In Chapter 1, the ethical issues raised by artificial intelligence are identified. In particular, an inventory of fundamental rights potentially affected by artificial intelligence is presented: this list includes respect for human dignity, individual freedom, respect for democracy, justice and the rule of law, equality, non-discrimination and solidarity, and citizens' rights.

For trustworthy intelligence (Trustworthy AI), four ethical principles based on fundamental rights should be respected. First of all, there is respect for human autonomy: humans interacting with artificial intelligence must be able to maintain their complete self-determination; artificial intelligence must increase human capacities in the cognitive, social and cultural spheres and not reduce them. Consequently, the human factor and human control appear to be decisive: technologies linked to artificial intelligence must remain at the service of the human being and respect fundamental rights in order not to call into question human autonomy.

Then there is the prevention of any infringement, equity and explainability. The aim here is to avoid harm to individuals and in particular "to pay particular attention to situations involving more vulnerable groups such as children, people with disabilities and other historically disadvantaged groups or those at risk of exclusion". The guide also wishes to avoid aggravating power or information asymmetries between people, whether in the relationship between employers and workers, or between companies and consumers.

Then comes the principle of loyalty, which consists in not introducing unfair elements: thus, the use of artificial intelligence should never lead to people being deceived or their freedom of choice being distorted. To this end, the authority in charge of artificial intelligence must be identifiable so that accounts can be requested. Finally, the principle of explicability is set out, which aims to ensure transparency of the procedures, possibilities and objectives of the artificial intelligence system, as well as its results. Transparency must ensure the traceability of artificial intelligence systems in order to verify that they comply with a sustainable and ecological development approach.

Chapter 2 makes seven recommendations for building trustworthy artificial intelligence. Human control of artificial intelligence must make it possible, if

necessary, to rule out the use of artificial intelligence or to refuse to take its results into account. Technical robustness and security through secure algorithms imply having an alternative solution in case of problems, minimizing unintended consequences or errors and performing preliminary tests considering foreseeable problems. Then there is privacy and data governance: it is a matter of users maintaining control over their personal data and ensuring that it is not used for harmful or discriminatory purposes. Transparency requires ensuring the traceability of both the data and processes on which the artificial intelligence decision-making system is based, diversity, non-discrimination and equity, social and environmental well-being and accountability. This last recommendation consists in making the actors of artificial intelligence accountable. This obligation consists in allowing the evaluation of artificial intelligence, to make it possible to prove the negative effects of an artificial intelligence system, as well as to set up a system for repairing damage that is easily accessible to victims.

In the last chapter 3 appears a table of evaluation of reliable artificial intelligence for the computer scientists who implement it: these are systems for evaluating the ethical nature of artificial intelligence practices.

In practical terms, artificial intelligence systems will have to remain under human control and supervision, comply with the main rules on personal data, rely on highly secure algorithms, be transparent and traceable, and ensure that they are accessible to the greatest number and non-discriminatory.

On this basis, the European Commission has launched a "pilot phase" during which the various actors, i. e. industrial companies, research structures and public authorities, are invited to express their positions in order to allow for an evaluation and updating of the guidelines in 2020, based on users' feedback.

The aim would be to create a general reference framework for all sectors of application of artificial intelligence, before creating specific frameworks for each sector of activity.

In the absence of legislation, the European Union is trying to impose rules on artificial intelligence with the soft law. However, these guidelines, which are not mandatory and have no binding effect, cannot alone regulate artificial intelligence. Whether they are ethical rules proposed by the European Union or ethical codes adopted by private companies, these self-regulatory standards can influence behaviour, but their legal value is weak[21]: they can only constitute a

21) For a severe criticism of the ethical rules proposed by the European Commission: Y. Meneceur, ibid., spéc. n° 27: «Without waiting for these potential legal developments,↗

complementary standard to the law, which must remain the main standard, in order to ensure efficiency and protection against the uses of artificial intelligence.

B- The recognition of a legal personality for the robot

The inadequacy of positive law leads some to want to admit that the robot becomes a subject of law. By creating a new legal fiction, the robot would be qualified as a person and would become the holder of rights and obligations[22].

In addition to the report "Regulating Emerging Robotic Technologies in Europe: Robotics facing Law and Ethics" of the Robolaw consortium of 22 September 2014 submitted to the European Commission[23], studies are being carried out on the legal aspects related to robotics and on the recognition of the legal personality of robots. One of these reports proposed, in particular, the recognition of a digital personality, in the same way as legal personality[24]. The common point of most of these proposals is to give the robot a status similar to that of a legal entity[25]. Through this recognition of a legal personality, robots could become holders of an identity and heritage. In particular, it is proposed to give robots an identity by a number similar to the social security numbers used for men and women[26]. The robot could be civilly and criminally liable for its actions, and it could compensate third parties to whom it may have caused damage through its assets.

The law is used to the legal fiction represented by the legal person, and it would not pose any technical difficulties to admit the robot as a new legal fiction to give it rights and obligations. The legal regime of legal persons has been almost

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↘the media, but also public decision-makers, should not therefore be distracted by these "ethics" and believe that they provide sufficient answers to the systemic and invasive effects of artificial intelligence on our society».

22) A. Mendoza-Caminade, The law confronted with the artificial intelligence of robots: towards the emergence of new legal concepts?, Revue Dalloz Sirey 25/02/2016, n° 8, p. 445-448; see also «Artificial Intelligence», Dalloz 2019, p. 233.

23) http: //www. robolaw. eu/RoboLaw_files/documents/robolaw_d6. 2_guidelinesregulatingrobotics_ 20140922.pdf

24) http://www.unipv-lawtech.eu/files/euRobotics-legal-issues-in-robotics-DRAFT_6j6ryjyp.pdf

25) P-J. Delage, Will androids dream of legal personality?, Science-fiction et science juridique, IRJS Editions 2013, p. 165.

26) A. Bensoussan, Robot law: science fiction or anticipation?, D. 2015, p. 1640; Advocacy for a robot right: from the "legal person" to the "robot person": La lettre des juristes d'affaires 23 oct. 2013, n° 1134; see also: L. Sillig, Let's give robots rights, www.lemonde.fr, 14 février 2013.

aligned with that of natural persons until they are granted fundamental human rights[27]. Beyond the practical modalities that can undoubtedly be solved, the very interest of this categorisation of robots is questionable[28]. Unlike a legal entity company, which represents a grouping and a specific object, the purpose of the legal personality granted to a robot is only to better define the legal consequences of the actions of intelligent robots. However, it is not certain that the legal treatment will be improved in the presence of a robot with legal personality, for example with regard to compensation for the victim of the robot[29]. This status could even have negative effects such as disempowering manufacturers and users[30]. The benefits of this status are not sufficiently proven to justify such a transformation of our legal concepts. In addition, a better understanding of robots can be found in the creation of a special liability regime[31]. The creation of a new legal fiction seems inappropriate to us, and other ways can be used to create a legal framework for intelligent robots.

Reflection is underway to establish the respective roles of man and intelligent robots. The adoption of ethical rules can now provide a positive framework for the use of artificial intelligence and its interaction with man.

When the use of intelligent robots is massive in the daily lives of people and businesses, an evolution in the legal treatment of intelligent robots should lead to the construction of a regime based on its qualification as a special good, with rules defining the functions accepted and those prohibited for the use of the robot, rules to protect the robot against piracy and human interference, as well as a special regime of objective civil liability. If the adaptability of our legal system still prevents any legal reform, the technological evolution of intelligent robots will undoubtedly force us to adapt our legal system[32].

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27) See especially N. Mathey, Fundamental rights and freedoms of legal persons governed by private law, RTD civ., 2008, p. 205.

28) Against the recognition of a legal personality for intelligent robots: G. Loiseau et M. Bourgeois, From the robot in law to a robot right, JCP G n° 48, 24 novembre 2014, doctr. 1231; also opposed: Ph. Veber, Will robots and humans be born and remain free and equal in law?, Décideurs Stratégie Finance Droit, 16 avril 2013.

29) G. Loiseau, Responsibilities due to artificial intelligence, Communication Commerce Électronique, 1er avril 2019, n° 4, p. 31-32.

30) G. Loiseau et M. Bourgeois, ibid.

31) A. Signorile, Towards a responsibility for intangible things in the light of digital technology?, Revue Lamy droit de l'immatériel, 1er mai 2019, n° 159, p. 40.

32) Th. Daups, For a constitutional charter on robotics and new technologies, Revue Les Petites Affiches, 06/10/2017, n° 200, p. 6-11.

Conclusion :

Until now, the normative choice made in Europe has been not to adopt regulations that could hinder the development of artificial intelligence. This lack of legal rules is often justified by the premature nature that such legislation would have had in the face of an immature technology characterized by its permanent evolution[33]. For us, it is perhaps the very nature of artificial intelligence that reduces the value of general regulation. Indeed, the great diversity of artificial intelligence techniques and the wide variety of uses of artificial intelligence make global legal regulation difficult.

However, the European Parliament advocates the adaptation of the legislation applicable at European and national level on new technologies[34]. It regrets that "no legislative proposal has been presented during the current legislation, which delays the updating of liability rules and compromises legal certainty throughout the Union, both for traders and consumers"[35]. Artificial intelligence, which is torn between the need for emancipation and the need for control, has certainly not finished to stimulate lawyers' thinking.

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33) Referring to the categorical urgency to legislate on artificial intelligence which "continues to increase, in an era favourable to their establishment, their true injunctive power. By recommending actions to us, they gradually create a new mode of rationality around us in all aspects of our lives, both collective and individual, and thus impose a new mode of statistical truth on us, against which it will become increasingly difficult to oppose a simple freedom: that of determining ourselves against all probability": Y. Meneceur, n° 27.

34) E. Palmerini, Towards a Robotic law at the EU level?, in Artificial Intelligence and Law, Larcier 2017, p. 47.

35) European Parliament resolution of February 12th 2019 on a comprehensive European industrial policy on artificial intelligence and robotics (2018/2088(INI)), v. spéc. n° 132.